October 3, 2023

Toxicology Division, MC 168
Texas Commission on Environmental Quality
P.O. Box 13087 Austin, TX 78711-3087
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Re: Sunset Management Recommendation 1.2: Commission Vote on Acceptable Level of Health Based Risk

Dear Commissioners,

Environmental Defense Fund (EDF) appreciates the opportunity to submit comments on the proposed action to set a target risk level (TRL) of 1 x 10^{-5} for air permitting of carcinogenic air pollutants in the Sunset Management Recommendation 1.2, which seeks to canonize the "acceptable individual-chemical excess cancer risk, or target risk level, used in permitting and other regulatory actions."

EDF is a nonpartisan, nonprofit, science-based organization representing over two million members and supporters nationwide (127,000 members in Texas). Since 1967, EDF has linked science, economics, and law to create innovative, equitable, and cost-effective solutions to urgent environmental problems. EDF and its members are deeply concerned about the health, environmental and economic impacts of air pollution.

EDF recommends, for new permits, amendments and reissues, that TCEQ set a target cancer risk level of 1 in 1,000,000 (1 x 10^{-6}) when setting screening levels that are used in TCEQ's air permitting program and compared to ambient air monitoring data. The target cancer risk level proposed by the Executive Director is not health protective. As described by EPA in the Regional Screening Levels Technical Document,[1] setting a higher benchmark risk level for individual chemicals and pathways will generally lead to cumulative risks within the risk range (1 in 10,000 to 1 in 1 million) for the combinations of chemicals typically found in many highly exposed communities, like those around industrial facilities in Texas.

TCEQ uses Effects Screening Levels (ESLs) for issuing air permits for certain chemicals that are based on 30% of the health-based reference value (ReV), which TCEQ has decided is the inhalation exposure that is likely to be without an appreciable risk of adverse effects, set for that chemical. As TCEQ acknowledges[2], the reason to set lower ESLs is that because "review of air

[1] EPA. Technical Background Document – Soil Screening Guidance – Part 1 -Introduction. https://semspub.epa.gov/work/HQ/175231.pdf
[2] See: pp. 8-9 TCEQ publication RG-442, TCEQ Guidelines to Develop Toxicity Factors. https://www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg-442.pdf

permit applications, site-wide modeled concentrations for one chemical at a time are evaluated. The impacts from multiple chemicals or from different sites are not included. Therefore, for air permitting, an additional buffer is applied to the acute or chronic ReV to calculate the acute and chronic ESLs."

However, this adjustment is explicitly *not* considered for carcinogenic compounds because, as described by TCEQ, "[f]urther adjustment of this no significant excess risk level is not necessary since few chemicals with a known or assumed nonthreshold dose-response assessment are routinely permitted in Texas for a given facility for a given facility and the risk management goal of 1×10^{-5} is ten times lower than the 1×10^{-4} level, defined by USEPA as an acceptable level of risk (USEPA 2000d)."[3]

Not only is the claim that "few chemicals with a known or assume nonthreshold dose-response assessment are routinely permitted" unsupported and suspect—given that the 42% of the petrochemical industrial capacity[4] of the United States is in the Houston metropolitan area alone—the assertion that "1×10^{-5} is ten times lower than the 1×10^{-4} level, defined by USEPA as an acceptable level of risk" ignores the additional risk from multiple contaminants or multiple pathways of exposure.

In the Sunset Management Recommendation 1.2, TCEQ cites the National Contingency Plan (NCP; 40 CFR Section 300.430) for their justification of "an acceptable lifetime excess cancer risk range of 1×10^{-6} to 1×10^{-4}." However, the full paragraph from 40 CFR §300.430(e)(2)(i)(A)(2)[5] is as follows:

> For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} using information on the relationship between dose and response. The 10^{-6} risk level shall be used as the point of departure for determining remediation goals for alternatives when [Applicable or Relevant and Appropriate Requirements] are not available or **are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure** *(emphasis added);*

Due to impacts from different sites (aggregate exposures and risks) and/or multiple chemicals (cumulative risks), EDF recommends taking a similar approach (by decreasing target cancer risk level from 1×10^{-5} to 1×10^{-6}) when permitting known or suspected cancer-causing chemicals to protect the health of the millions of Texans living closest to facilities that emit hazardous and known cancer causing pollutants. Setting a higher benchmark risk level for individual chemicals and pathways will generally lead to cumulative risks within the risk range (1 in 10,000 to 1 in 1 million) for the combinations of chemicals typically found in many highly exposed communities.

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[3] See: p. 9 TCEQ publication RG-442, TCEQ Guidelines to Develop Toxicity Factors. https://www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg-442.pdf

[4] Bridges, L. R. (2019). Houston Economic Outlook Retrieved from Houston, TX: https://colliershouston.s3.us-east-2.amazonaws.com/2019+Market+Reports/2019-Houston-EconomicOutlook-Colliers.pdf

[5] https://www.ecfr.gov/current/title-40/chapter-I/subchapter-J/part-300

Furthermore, the claim that a TRL of 1 x 10^{-5} "[i]nsignificantly contributes to an individual's lifetime cancer risk (e.g., increases total risk from approximately 33,000 in 100,000 to 33,001 in 100,000, a *de minimis* increase of 0.001%)" is grossly misleading. While it is true that background cancer-levels are roughly 1 in 3, this is an overall incidence of cancer[6] and it is inappropriate to simply lump together all types of cancers as a background when considering a chemically-induced cancer. Further, this background cancer level is an average for the entire population and does not take into account hereditary factors nor that some cancers are hormonally mediated. Further, it is unknown how much of the background risk is due to carcinogenic toxic chemical exposures.

To understand that risk, one must only consider the incidence of the specific type of cancer caused by that specific chemical. For example, acute myeloid leukemia (AML) is caused by chronic benzene exposure. According to the American Cancer Society,[7] the lifetime risk of AML is 0.5% (not 33%). This would increase the total risk of AML from benzene exposure (at a TRL of 1 x 10^{-5}) from approximately 500 in 100,000 to 501 in 100,000. Meaning that one out of every 501 cases of AML would have been caused by benzene exposure. This cannot be considered "de minimis."

With cancer risk exposure levels currently set at 1 in 100,000, as demonstrated in 2023 by ProPublica,[8] many areas of Texas have become "hotspots" where cancer risk exposures on the ground are greater than 1 in 100,000 due to cumulative exposure risk.

Area of Industrial Cancer Risk	**Population in Hotspot**	**Average Risk**	**Highest Risk**
Port Arthur, Texas	340,000	1 in 30,000	1 in 53
Port Lavaca, Texas	76,000	1 in 29,000	1 in 63
Longview, Texas	130,000	1 in 29,000	1 in 140
Houston, Texas	2,100,000	1 in 29,000	1 in 150
Freeport, Texas	19,000	1 in 25,000	1 in 450
Laredo, Texas	130,000	1 in 30,000	1 in 560
Total	**2,795,000**		

Under the CAA section 112(f) residual risk program, EPA also uses the range of cancer benchmarks for screening and in its refinements in its analysis. It does not apply separate benchmarks to different subpopulations. The following is taken from EPA OAQPS, RESIDUAL RISK Report To Congress EPA-453/R-99-001 (March 1999) Exhibit 21 Summary Of Assumptions And Criteria For Evaluating Public Health Risks:

[6] See the American Cancer Society https://www.cancer.org/cancer/risk-prevention/understanding-cancer-risk/lifetime-probability-of-developing-or-dying-from-cancer.html
[7] See the American Cancer Society https://www.cancer.org/cancer/types/acute-myeloid-leukemia/about/key-statistics.html
[8] See ProPublica https://projects.propublica.org/toxmap/

	Screening Level[9]	Refined[10]
Criteria	• Upper-end individual cancer risk $<10^{-6}$ generally considered acceptable • Upper-end individual cancer risk $\geq 10^{-6}$ may lead to refined analysis • HI < 1 generally considered acceptable • HI $\geq$ 1 leads to reexamination of additivity assumptions and if HI still greater than 1, may lead to refined analysis	• **Upper-end individual cancer risk $<10^{-6}$ generally considered acceptable** • Upper-end individual cancer risk of roughly 1 in 10,000 is ordinarily considered the upper end of the range of acceptability • Decisions on unacceptable risk will be made on a case specific basis, considering information including confidence in the risk estimate, population size, distribution of risk within the population, presence of sensitive subpopulations at various risk levels, the effects of concern, uncertainties in the effects information, and other factors.

EDF further recommends stricter oversight of the air permitting program to ensure permits issued are in line with risk assessment practice and that facilities that obtain air permits remain in compliance. We urge TCEQ to apply more stringent standards to protect the health of our must vulnerable Texans living in overburdened communities. Residents representing frontline communities expressed their desire for better health protections and consideration of cumulative impacts from TCEQ in the Sunset review. We believe implementing a TRL of one in a million (1×10^{-6}) for carcinogenic air pollutants is one step that demonstrates a commitment to addressing issues overburdened communities have identified and improving public health protections for all Texans.

Thank you for your consideration of these comments.

Respectfully,

Cloelle Danforth, Ph.D., Senior Health Scientist
Maria J. Doa, Ph.D., Senior Director, Chemicals Policy
Grace Tee Lewis, Ph.D., Senior Health Scientist
Stephanie Coates, MSW/MPP, Community Air Quality Tom Graff Fellow

[9] Screening assessment may be based on upper-end estimated HAP exposure at the location of either the hypothetical MEI or the MIR in locations people are believed to occupy. Available toxicity values will be considered.

[10] Refined assessment based on more detailed and site-specific, and less conservative, estimated HAP exposures at the MIR location and throughout the spatial area of impact. EPA consensus toxicity values, or equivalent, reviewed in light of any additional credible and relevant information, are typically used.